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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Stephen R. Genheimer, Kenneth L. Pottebaum, Jon P. Baker and John D. Stricklin

Serial No.: 09/114,956

Group No.: 2754

Filed: July 13, 1998

Examiner: W. Klimowicz

For: ACTUATOR ASSEMBLY MOUNTED DISC SNUBBER

Assistant Commissioner for Patents
Washington, D.C. 20231

Attention: Board of Patent Appeals and Interferences

TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION - 37 CFR 1.192)

1. Transmitted herewith, in triplicate, is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on July 12, 1999.

NOTE: "Appellant must, within 2 months from the date of the notice of appeal under § 1.191 or within the time allowed for reply to the action from which the appeal was taken, if such time is later, file a brief in triplicate." 37 CFR 1.192(a) [emphasis added].

2. STATUS OF APPLICANT

This application is on behalf of

- ☒ other than a small entity.
☐ a small entity.
A statement:
☐ is attached.
☐ was already filed.

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3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 CFR 1.17(c), the fee for filing the Appeal Brief is

☒ other than a small entity \$300.00

Appeal Brief fee due **\$ 300.00**

4. EXTENSION OF TERM

NOTE: The time periods set forth in 37 C.F.R. 1.192(a) are subject to the provision of § 1.136 for patent applications. 37 C.F.R. 1.191(d). See also Notice of November 5, 1985 (1060 O.G. 27).

The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply.

(complete (a) or (b), as applicable)

- (a) ☒ Applicant petitions for an extension of time under 37 C.F.R. 1.136 (fees: 37 C.F.R. 1.17(a)(1)-(5) for the total number of months checked below:

Extension (months)	Fee for other than small entity	Fee for small entity
<input checked="" type="checkbox"/> one month	\$110.00	\$55.00
<input type="checkbox"/> two months	\$380.00	\$190.00
<input type="checkbox"/> three months	\$1,380.00	\$435.00
<input type="checkbox"/> four months	\$1,360.00	\$680.00
<input type="checkbox"/> five months	\$1,850.00	\$925.00

Fee **\$ 110.00**

If an additional extension of time is required, please consider this a petition therefor.
(check and complete the next item, if applicable)

- ☐ An extension for ____ months has already been secured, and the fee paid therefor of \$____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ _____

5. TOTAL FEE DUE

Appeal brief fee	<u>\$ 300.00</u>
Extension fee (if any)	\$ 110.00


TOTAL FEE DUE \$ 410.00

☒ Attached are two checks in the amount of \$ 300.00 (Appeal Brief fee)
\$110.00 (One-month extension
fee)

7. FEE DEFICIENCY

☒ If any additional extension and/or fee is required, this is a request therefor and to charge Account No. **13-0110.**

☒ If any additional fee for claims is required, charge Account No. **13-0110.**


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DKT. 22306

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Stephen R. Genheimer,) Group Art Unit:
Kenneth L. Pottebaum,)
Jon P. Baker and John D. Stricklin) Examiner: W. Klimowicz
Serial No.: 09/114,956)
Filed: July 13, 1998) APPELLANT'S BRIEF
For: ACTUATOR ASSEMBLY MOUNTED)
DISC SNUBBER) Date: October 12, 1999

Assistant Commissioner for Patents
Washington, DC 20231

ATTENTION: Board of Patent Appeals and Interferences

Sir:

APPELLANT'S BRIEF (37 C.F.R. 1.192)

This brief is in furtherance of the Notice of Appeal, filed in this case on July 12, 1999. The fees required under § 1.17, any required petition for extension of time for filing this brief and fees therefor and the authority and time limits established by the Decision mailed February 12, 1999, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate. (37 C.F.R. 1.192(a))

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. 1.192(c)):

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS

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- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF INVENTION
- VI. ISSUES
- VII. GROUPING OF CLAIMS
- VIII. ARGUMENTS

(check each category of Argument submitted in this brief)

- ☐ ARGUMENT: VIIIA REJECTIONS UNDER 35 U.S.C. 112,
FIRST PARAGRAPH
- ☐ ARGUMENT: VIIIB REJECTIONS UNDER 35 U.S.C. 112,
SECOND PARAGRAPH
- ☒ ARGUMENT: VIIC REJECTIONS UNDER 35 U.S.C. 102
- ☒ ARGUMENT: VIID REJECTIONS UNDER 35 U.S.C. 103
- ☐ ARGUMENT: VIIE REJECTIONS OTHER THAN 35 U.S.C. 102,
103

AND 112

- IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL
- ☐ OTHER MATERIALS THAT APPELLANT CONSIDERS NECESSARY
OR DESIRABLE

The final page of this brief bears the attorney's signature.

I. REAL PARTY IN INTEREST (37 C.F.R. 1.192(c)(1))

The real party in interest in this appeal is:

- ☐ the party named in the caption of this brief.
- ☒ the following party: **Seagate Technology, Inc., a Delaware corporation**

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal:

- A. ☒ there are no such appeals or interferences.
- B. ☐ these are as follows:

III. STATUS OF CLAIMS (37 C.F.R. 1.192(c)(3))

The status of the claims in this application are:

<u>Claim</u>	<u>Status</u>
18. (Amended)	Independent
19. (New)	(Depends from claim 18)
20. (New)	(Depends from claim 18)

21. (Amended)	Independent
22. (New)	(Depends from claim 21)
23. (New)	(Depends from claim 21)
24. (Amended)	(Independent)

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are:

Claims 18-24.

B. STATUS OF ALL THE CLAIMS

1. Claims canceled: 1-17
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 18-24
4. Claims allowed: None
5. Claims rejected: 18-24

C. CLAIMS ON APPEAL

The claims on appeal are: 18-24

IV. STATUS OF AMENDMENTS (37 C.F.R. 1.192(c)(4))

The present application was filed July 13, 1998 with claims 1 -17. A preliminary amendment filed on July 13, 1998 canceled claims 1-17 and added claims 18 -24. The November 12, 1998 Office Action rejected claims 18, 21 and 24 under 35 U.S.C. §102(e) and claims 19, 20, 22 and 23 under 35 U.S.C. §103(a).

In response thereto, the Applicants filed an amendment providing minor amendments to claims 18, 21, and 24. A final Office Action mailed April 12, 1999 rejected claims 18, 21, and 24 under 35 U.S.C. §102(e) and rejected claims 19, 20, 22 and 23 U.S.C. §103(a).

In response thereto, a first post-final amendment pursuant to 37 C.F.R. § 1.116 was filed on June 11, 1999, which canceled claim 24. However, the Examiner refused entry of the amendments.

In an advisory action mailed June 21, 1999, the Examiner formally refused entry of the proposed amendments of the claims. In response, the Applicants filed a Notice of Appeal on July 12, 1999.

V. SUMMARY OF INVENTION (37 C.F.R. 1.192(c)(5))

The present invention relates to an apparatus for protecting a disc drive from damage due to mechanical shocks encountered during shipment and handling.

As discussed in the Background section of the specification at page 3, lines 4-9, the narrow vertical spacing of the discs in a disc drive give rise to a problem of increased sensitivity of the disc drive to non-operating, mechanical shocks. Particularly, non-operating shocks can cause deflection of actuator arms and thereby cause damage to both the disc surfaces and the actuator arms themselves.

Disc to actuator arm contact can induce a shock wave of sufficient magnitude to travel down to the gimbal assemblies and heads, causing the heads to flex up off of the landing zones as a result of the relatively flexible gimbal assemblies to which the heads are attached. The heads can thus obtain significant velocities as they accelerate away from and then back toward the disc, resulting in "head slap." When such velocities are sufficiently severe, damage can occur to the heads and to the surfaces of the discs as the heads strike landing zones. Moreover, should a head tilt during such liftoff, which often occurs, an edge or a corner of the head can strike the disc surface, increasing probability of damage to the

head or the disc. Therefore, protecting the gimbal assembly itself from deflection can prevent the head to disc contact. However, a disc snubber placed within the gimbal assembly is highly susceptible to displacement upon the application of a mechanical force because of the gimbal assembly's flexibility. Consequently, affixing a disc snubber on a rigid medium better ensures that the disc snubber remains effectively stationary even upon the application of a mechanical force.

The present patent application discloses a method and apparatus for protecting components of a disc drive from damage due to non-operational mechanical shocks by dampening contact between a surface of an actuator arm and a surface of a disc. The claimed invention operates to reduce the effects of the disc to actuator contact as a result of deflection of the actuator arm. More particularly, as discussed in the Detailed Description section of the specification at page 12, line 8 to page 14, line 1, a disc snubber 100C is supported by the rigid E-block 20A (actuator body) to reduce contact between discs 18 and actuator arms 24. As shown in FIGS. 6 and 7, the disc snubber 100C is affixed to the up-wind side of the E-block 20A by way of a fastener 118. Attaching the disc snubber 100C to the rigid E-block 20A ensures that the disc snubber 100C remains effectively stationary even upon the application of a mechanical force.

The disc snubber 100C further comprises snubber arms 102C extending adjacent to the corresponding actuator arms 24 and between adjacent discs 18. As shown more clearly in FIG. 6, the snubber arms 102C provide receiving grooves between adjacent actuator arms 24 to receivingly engage, non-data track portions of the outer edges of the discs 18. In particular, the snubber arms 102C do not extend radially into the disc stack so as to position the snubber arms 102C adjacent to data recording surfaces on the disc.

Instead, the snubber arms 102C , are configured to minimize the radial extent of the snubber arms 102C over the range of motion of the actuator arms 24 in moving the read/write heads 28 between the inner and outer diameters of the discs 18. (Specification, p. 12, line 19 to p. 13, line 2; p. 9, lines 2-10).

VI. ISSUES (37 C.F.R. 1.192(c)(6))

The following issues are presented for review:

1. Whether claims 18, 21, and 24 are unpatentable over U.S. Patent 5,422,770 issued to Alt ("Alt '770") under 35 U.S.C. § 102(e).
2. Whether claims 19, 20, 22, and 23 are unpatentable under 35 U.S.C. §103 as being obvious over U.S. Patent 5,422,770 issued to Alt ("Alt '770").

VII. GROUPING OF CLAIMS (37 C.F.R. 1.192(c)(7))

The Applicants hereby state that all of the claims stand or fall together.

VIIIB. ARGUMENTS --REJECTION UNDER 35 U.S.C. § 102(e) 37 CFR 1.192 (c)(8)(iii)

The issue presented on appeal is whether claims 18, 21, and 24 are unpatentable over U.S. Patent 5,422,770 issued to Alt ("Alt '770") under 35 U.S.C. § 102(e). The Applicants reply in the negative and submit that the claimed invention, as claimed in claims 18, 21, and 24, is patentably distinct over Alt '770 because Alt '770 fails to teach or suggest specific claim limitations disclosed in the present invention.

It is believed that a brief review of the cited reference will facilitate the following

discussion. Alt '770 teaches a shock bumper for absorbing forces resulting from non-operational shock and inflicted upon a computer disc drive. Alt '770 attaches the shock bumpers to the base plate 101, or alternatively, to an underside of the load arm 406.

In contrast, the present invention discloses a disc snubber 100C affixed to the upwind side of the E-block 20A by way of a fastener 118. (Specification, p. 12, lines 10-11; p. 13, lines 21-22). In particular, as claimed, the disc snubber is affixed to the rigid actuator body. (Claim 18, line 6, emphasis added). The Applicants first point out that an E-block, as is generally known in the art, is a rigid medium from which rigid actuator arms extend to support flexible suspensions. Suspensions must be flexible since load arms and flexures extend from portion of the actuator assembly to support flyable heads.

In the Final Office Action, the Examiner erroneously characterizes the load arm 406 as a rigid actuator body, stating that Alt '770 discloses a "disc snubber affixed to the rigid actuator body comprising a disc snubber arm which extends along a portion of the rigid actuator arm." (Final Office Action, p. 2, para. 2). Since the Examiner is unclear as to the differences between an E-block (rigid actuator body) and a flexible load arm as described in Alt '770, the Applicants now turn to the disclosure within Alt '770 to review the differences.

First, Alt '770 distinguishes between a load arm and an actuator arm, designating each by numerals 406 and 405, respectively. (Alt '770, col. 8, lines 35-36). Providing further evidence of the fact that the load arm and the actuator arm are distinct features of the disc drive, Alt '770 specifically describes that "load arm 406 is attached to actuator arm 405 by sandwiching load arm 406 between actuator arm 405 and staking plate 407 and swaging together ('staking') load arm 406, actuator arm 405 and staking plate 407."

(Alt '770, col. 8, lines 37-43). Therefore, the Applicants submit that based simply on the disclosure of the cited reference, the Examiner's assertion that the load arm 406 of Alt '770 and the rigid actuator arm of the claimed invention are the same, is clearly erroneous.

Moreover, although the Examiner fails to appreciate the differences between a rigid actuator arm and a flexible load arm, Alt '770 itself recognizes such a difference. In particular, Alt '770 discloses that the load arm 406 is etched to achieve desired spring characteristics. (Alt '770, col. 8, lines 48-50). Alt '770 goes further to describe that load arm 406 supports a flexible flexure 408, which constitute the suspension. (Alt '770, col. 8, lines 44- 53). The suspension in Alt '770 in turn supports a magnetic head 105 so that the magnetic head 105, load arm 406 and flexure 408 together constitute a head gimbal assembly. (Alt '770, col. 8, lines 53-58). The Applicants therefore steadfastly assert that the load arm 406 disclosed by Alt '770 is not only distinct from the actuator arm 405, but is also flexible to facilitate the functions of the head gimbal assembly, including the flyable characteristics of the supported head 105.

Since Alt '770 specifically teaches that the load arm 406 is part of the gimbal assembly, the Applicants now turn the discussion to the gimbal assembly of the present invention. As disclosed on page 6 of the Detailed Description section of the specification, the gimbal assemblies are designated as numeral 26, and are referred to as load springs 26. (Spec., p. 6, line 11-14). It is well known to a person skilled in the art that gimbal assemblies are commonly referred to as load springs because of their spring characteristics. Using an almost identical description as in Alt '770, the present application describes the gimbal assemblies 26 as being supported by the actuator arms

24. (Spec., p. 6, line 12). As more clearly depicted in FIG. 1, gimbal assemblies 26 are distinguished from actuator arms 24, with the gimbal assemblies 26 supporting the heads 28. The definition of gimbal assemblies as used in the present application is therefore consistent with the definition provided in Alt '770.

As discussed hereinabove, affixing a disc snubber to a rigid actuator body as in the claimed invention, as opposed to the underside of a portion of a gimbal assembly, as in Alt '770, protects the disc drive from head slap while better ensuring against snubber displacement upon the application of a mechanical shock. By attaching the shock bumper 124 to the underside of the flexible load arm 406, Alt '770 effectively fails to recognize a need to protect against actuator arm to disc contact. In fact, Alt '770 does not rely upon the rigidity of the actuator arm 405 itself because the load arm 406 and the adjacent load rod 106 are lifted and parked on the cam 107 during nonoperational mode. Moreover, Alt '770 explicitly teaches against placing shock bumper 124 further back on the actuator (such as on the rigid actuator arm), noting that "shock bumper 124 is located near the cutout 406a so that shock bumper 124 will contact the disk 102 sooner during shock than would otherwise be the case if shock bumper 124 were located where the clearance between the actuator 103 and the disk 102 is greater, making the shock bumper 124 more effective in preventing contact between any portion of actuator 103 and disk 102." (Alt '770, col. 9, lines 26-33). In order to sustain a rejection under 35 U.S.C. § 102, every limitation in the claimed invention must be identically shown in a single cited prior art reference. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990). In light of the foregoing discussion, the Applicants submit that it would be abundantly clear to one skilled in the art that Alt '770 discloses attaching a shock bumper 124 to a flexible load arm, whereas the

claimed invention discloses a disc snubber affixed to a rigid actuator body and having disc snubber arms extending along a portion of a rigid actuator arm. Moreover, the Applicants urge that Alt '770 would not lead one skilled in the art to arrive at the invention as claimed by claims 18, 21, and 24. Under In re Bond, therefore, the Examiner has failed to show all of the claimed limitations of the present invention, and therefore has erroneously rejected the present application. The Applicants respectfully request that the Board overturn the rejection and advance instructions to enter the amended claims 18, 21 and 24.

**VIIID ARGUMENTS--REJECTIONS UNDER 35 U.S.C. 103,
(37 C.F.R. 1.192(c)(8)(iv))**

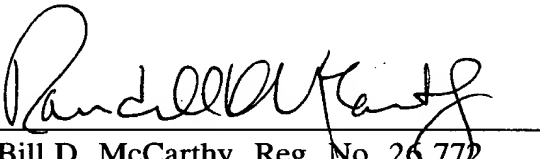
The issue on appeal is whether claims 19, 20, 22, and 23 are unpatentable under 35 U.S.C. §103 as being obvious over U.S. Patent 5,422,770 issued to Alt ("Alt '770"). The Applicants reply in the negative and submit that the claimed invention is patentably distinct over the cited references either alone or in combination.

A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993). Moreover, the prior art reference as a whole must not only contain each and every element, but the reference must teach that particular combination of the elements. *In re Mhurkhar Patent Litigation*, 28 USPQ2d 1801, 1817 (N.D.Ill. 1993). In the present invention, the Applicants submit that the independent claims 18 and 21 are patentable over the Examiner's cited art because the prior art fails to disclose all of the claimed limitations

of the present invention. Claims 19, 20 and 22 depend from independent claim 18, and claim 23 depends from independent claim 21. The Applicants therefore submit that, under In re Mhurkhar, dependent claims 19, 20, and 22 are allowable as depending from allowable independent claims which disclose novel and nonobvious elements. Reversal of the final rejections of claims 19, 20, and 22 is thus respectfully requested.

Respectfully submitted,

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IX. APPENDIX OF CLAIMS (37 C.F.R. 1.192(c)(9))

18. An actuator assembly for use in a disc drive, comprising:

a rigid actuator body rotatable about a pivot shaft;

a rigid actuator arm which extends from the rigid actuator body to support a
read/write head adjacent a selected surface of the disc between an inner
5 diameter and an outer diameter of the disc; and

a disc snubber affixed to the rigid actuator body comprising a disc snubber arm
which extends along a portion of the rigid actuator arm and adjacent an
outer non-recording surface of the disc over a desired range of actuator arm
motion wherein the read/write head is moved between the inner and outer
10 diameters, the disc snubber limiting deflection of the disc resulting from
application of a non-operational shock to the disc drive to minimize contact
between the disc and the rigid actuator arm.

19. The actuator assembly of claim 18, wherein the read/write head is operably

15 configured to rest upon the disc surface at a landing zone defined at an inner radius of the
disc and wherein a distance the disc snubber arm extends adjacent the rigid actuator arm is
selected so that the disc snubber arm is disposable over the disc surface at such time that
the head is brought to rest upon the landing zone and is retracted beyond an outer radius
of the disc at such time that the read/write head is moved to a position over the disc
20 surface between the inner and outer radii of the disc.

20. The actuator assembly of claim 18, further comprising a fastener which extends through the disc snubber and into the side of the rigid actuator body to affix the disc snubber to the rigid actuator body.

21. (New) A disc drive, comprising:

a disc rotatable about a disc axis and having a data recording surface on which

data are magnetically stored between an inner diameter and an outer diameter of the disc; and

5 an actuator assembly mounted for rotation adjacent the disc, comprising:

a rigid actuator body rotatable about a pivot shaft;

a rigid actuator arm which extends from the rigid actuator body to support

a read/write head adjacent the data recording surface; and

a disc snubber affixed to the rigid actuator body comprising a disc snubber

10 arm which extends along a portion of the rigid actuator arm and

adjacent a non-recording surface at the outer diameter of the disc

over a range of actuator arm motion wherein the read/write head is

moved between the inner and outer diameters, the disc snubber

limiting deflection of the disc resulting from application of a non-

15 operational shock to the disc drive to minimize contact between the

disc and the rigid actuator arm.

22. The disc drive of claim 21, wherein the read/write head is brought to rest

upon the disc surface at a landing zone defined at an inner radius of the disc and wherein a

20 distance the disc snubber arm extends adjacent the rigid actuator arm is selected so that

the disc snubber arm is disposable over the disc surface at such time that the head is

brought to rest upon the landing zone and is retracted beyond an outer radius of the disc at

such time that the read/write head is moved to a position over the disc surface between the

inner and outer radii of the disc.

23. The disc drive of claim 21, further comprising a fastener which extends through the disc snubber and into the side of the rigid actuator body to affix the disc

5 snubber to the rigid actuator body.

24. A disc drive, comprising:

a rotatable disc;

a pivotal actuator supporting a read/write head in a data reading and writing

relationship with the disc, and

5 limit means supported by the actuator for limiting deflection of the disc in response
to application of a non-operational shock to the disc drive.